

Docket No. 010139

Serial No. 10/066,072

REMARKS/ARGUMENTS

Claims 1, 3, 8-11, 13, 14, 17-20, 22-24, 26-28, 31, 33, 34, and new claims 35-39 are pending in the application. Applicant thanks the Examiner for indicating that claims 31 and 33-34 are allowable. Applicant, by this paper, amends claims 1, 11, 14, and 20. Applicant adds new claims 35-39. No new matter is added by the new claims. Applicant respectfully requests reconsideration and allowance of all pending claims.

Discussion of Rejections Under 35 U.S.C. §103

Claims 1, 3, 8-11, 13-14, 17-20, 22-24, and 26-28 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent No. 5,410,750 to Cantwell et al. (hereinafter Cantwell) in view of UK Patent Application publication number GB 2,343,572 to Tolson et al. (hereinafter Tolson).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be reasonable expectation of success. Finally, the prior art reference, or references when combined, must teach or suggest all of the claim limitations. Applicant contends that one or more of the criteria for a *prima facie* case of obviousness has not been set forth.

The Examiner responded to Applicant's arguments by noting that Applicant's independent claims 1, 11, 14, and 20 do not contain the term "feedforward." Additionally, the Examiner contends that Applicant's Figure 3 illustrates a feedforward structure. *See, Office Action*, at pages 10-11.

Applicant, by this paper, amends independent claims 1, 11, 14, and 20 to expressly recite the feedforward structure. Although Applicant believes that the prior recitation of elements described a feedforward structure, Applicant amends the claims to explicitly include the term "feedforward." Additionally, Applicant respectfully points out that the system illustrated in Applicant's Figure 3 represents a feedback structure and not a feedforward structure as argued by the Examiner. In particular, Applicant points to the specification, at page 10, paragraph [0029], which expressly identifies the system of Figure 3 as illustrating a feedback mode of removing jammer signals. ("The system 100 may be implemented in a feedback mode, illustrated in the function block diagram of FIG. 3, or in a feedforward mode as illustrated in the function block diagram of FIG. 5.")

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Claim 1 recites “[a] system for the reduction of distortion in a wireless communication circuit in a wireless communication circuit having an RF combined signal including a desired signal and an out of band jammer signal.” The system includes a feedforward processing path and an adder that adds an upconverted filtered signal from the feedforward path with the combined signal. The combined signal, as set forth in the preamble of the claim, is an RF combined signal.

The references, whether alone or in combination, fail to teach or suggest at least these claimed features. Cantwell fails to teach or suggest frequency converting an RF combined signal to substantially a baseband signal. In contrast, Cantwell teaches downconverting an Intermediate Frequency (IF) signal in the interference detector 18. Indeed, Cantwell describes a receiver RF section 14 and IF front end 16 prior to the interference suppressor unit 12 having the interference detector 18.

Additionally, Cantwell fails to describe an up mixer that is configured to frequency convert the filtered signal to substantially an RF frequency of the jammer signal. The interference canceler 20 described in Cantwell operates on the input IF signal. *See, for example, Cantwell, FIG. 2.*

Furthermore, as conceded by the Examiner, “Cantwell fails to teach the wireless communication and the signal mixer coupled to the output of the adder circuit.” *Office Action*, at page 3. The Examiner contends that one of ordinary skill in the art would look to Tolson, and the combination of Cantwell with Tolson teaches or suggests all claimed elements.

Tolson fails to teach a signal mixer that is coupled to an output of an adder circuit that operates to add a combined RF signal with a feedforward signal.

As noted in the previous response, filed July 14, 2005, Tolson only describes *feedback* techniques for controlling signal components. Indeed, the very title of Tolson is “RECEIVER WITH *FEEDBACK* SUBTRACTION OF UNWANTED SIGNALS TO CONTROL BANDWIDTH.” (*emphasis added*).

There is no suggestion or motivation to modify the teachings of Tolson in a manner that would result in a feed-forward technique, nor is there any description in Tolson that would suggest the applicability of its teachings to feedforward techniques. The Examiner does not identify any teachings that suggest that one of ordinary skill in the art would look to

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feedback techniques as suggestive of feedforward techniques, or that one could successfully integrate portions of feedback circuits into a feedforward system.

Therefore, independent claim 1 is believed to be allowable because Cantwell and Tolson fail to teach all claimed elements, there is no motivation to modify the teachings of the references, and there is no evidence of a likelihood of success in combining the teachings of the references. Applicant respectfully requests reconsideration and allowance of claim 1.

Claims 11, 14, and 20 also claim a feedforward path and downconverting the jammer reduced signal following the adder. Thus, claims 11, 14, and 20 are believed to be allowable at least for the same reasons discussed above in relation to claim 1.

Additionally, claim 11 sets forth the combined signal as an RF combined signal, and claim 14 describes an RF signal being a combined signal. As discussed above, Cantwell fails to describe operating on an RF signal and instead, describes operating on an IF signal. The up converter 45 of Cantwell does not upconvert to an RF signal and the interference canceler 20 does not operate on an RF signal. Thus, claims 11 and 14 are believed to be allowable at least for this reason, independent of any other reason. Applicant respectfully requests reconsideration and allowance of claims 11, 14, and 20.

Discussion of Dependent Claims

Claims 3, 8-10, 13, 17-19, 22-24, and 26-28 depend either directly or indirectly from one of claims 1, 11, 14, or 20. The dependent claims are believed to be allowable at least for the reason that they depend from an allowable base claim. There may be independent reasons for patentability of each of the dependent claims. It is unnecessary to discuss each of those reasons in light of the allowability of the base claims. However, Applicant discusses particular dependent claims to illustrate particular distinct reasons for patentability.

Claim 3 includes the feature that "the wireless communication circuit is a quadrature circuit and the down mixer is a quadrature mixer core, the filter comprising first and second filter portions to filter first and second quadrature components, respectively."

Although Cantwell describes I and Q processing, Cantwell fails to describe "first and second filter portions to filter first and second quadrature components, respectively." In contrast, Cantwell describes a single interference excisor 42 operating on combined I and Q signals. Because Cantwell describes the interference excisor 42 operating on an output of an FFT 40, it is extremely unlikely that the interference excisor operates as first and second filter portions that operate on first and second quadrature components. Furthermore, it is not

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clear that separate quadrature (I and Q) filter portions could be integrated in the apparatus of Cantwell, because of the FFT operation transforming the samples to frequency domain samples. Thus, claim 3 is believed to be allowable because the references, whether alone or in combination, fail to teach or suggest the claimed features.

Claim 8 features the filter comprises a high pass filter. However, it is clear that the filter in Cantwell cannot be implemented as a highpass filter, because the interference excisor in Cantwell operates on the FFT output. The discussion of a highpass filter in Tolson is not relevant because there is no likelihood of successful combination in the manner argued by the Examiner. Furthermore, as discussed above, Tolson describes a feedback system and there is no suggestion nor motivation for applying the feedback techniques to a feedforward system.

Similarly, **claim 10** features an operational bandwidth that is based on an operational bandwidth of the wireless communication specified operational bandwidth. As discussed above in relation to claim 8, Cantwell describes an interference excisor that operates on an FFT output. Thus, it is not clear how any operational bandwidth would be applied to the FFT output, nor is there any discussion as to the likelihood of successful combination of a specific operating bandwidth to the FFT output. Thus, claim 10 is believed to be allowable because the references fail to teach or suggest all featured claim elements and fail to suggest a modification or combination that has a likelihood of success.

Applicant contends that the other dependent claims may have similar distinct features that give rise to patentability.

Discussion of New Claims

Applicant adds new claims 35-39. Support for the new claims can be found with in the specification, as filed. In particular, support for claims 35-38 can be found, for example, at page 17, paragraph [0043]. Support for claim 39 can be found, for example, at FIG. 6 (filters 122A and 122B).

Applicant respectfully requests allowance of claim 35-39.

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CONCLUSION

Applicant believes that all claims pending in the application are allowable. Applicant therefore respectfully requests that a timely Notice of Allowance be issued in this case. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned.

Respectfully submitted,

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